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⑤④ **Self-contained apparatus for emergency lighting incorporating alarm systems for fire, gas and the like.**

⑤⑦ **Self-contained apparatus for the emergency lighting comprising lighting means, detecting means for gas and the like, which can send an electric input, processing means which can receive upsaid electric input, optic and/or acoustic alarm means.**

**EP 0 442 853 A2**

## SELF-CONTAINED APPARATUS FOR EMERGENCY LIGHTING INCORPORATING ALARM SYSTEMS FOR FIRE, GAS AND THE LIKE

The present invention relates to a self-contained apparatus for emergency lighting comprising at least one sensor/detector sending an electric input to a processor, and A detection and alarm system controlled by upsaid processor.

It is known that, in case of current cutoff and/or gas escape or fire, a timely alarm signal is required to allow prompt aid intervention and/or danger neutralization.

In the state of art, several other systems for the detection of such events are known ; however, they show some determinant limitations : among them, the need to be constantly connected to a supply mains and, in case of portable lamps, the impossibility to incorporate gas detectors or the like.

Therefore, the technical problem is to produce a self-contained lighting apparatus suitable for the detection and alarm signalling of other casual dangerous events such as gas escapes, fires and the like, which can arise in the border area of the lighting apparatus position.

These aims are all achieved by the self-contained apparatus for emergency lighting object of the present invention, which comprises lighting means, detection means for gas, smokes, heat and the like, which send the electric input, processing means which receive upsaid electric input, and alarm means which can be activated by upsaid processing means, so that dangerous events can be detected and signalled in real time and without any need of supply mains.

Further characteristics of the present invention will be better disclosed from the following detailed description of an embodiment of the invention, with reference to the drawings, where the following items are :

- in fig. 1, an apparatus according to the present invention, showing a lateral view of a portable lamp ;
- in fig. 2, the front view of the portable lamp shown in fig. 1. From the abovementioned figures it can be noticed that in body 1, provided with a handle, transparent screen 2 is inserted in the forepart ; lighting element 3, supported by its caps, is positioned under the screen.

On the handle, switch 4 can be changed over in three positions : with plug 9 connected to the supply mains ; on position II, only gas detector 5, corresponding to louvers 6 and 6', is on ; on position I also the emergency lamp, in case of current cutoff, gets on. When plug 9 is disconnected from the supply (self-contained portable lamp), with the switch on "O" position, the system is completely off ; on "I" position, both gas detector and emergency lamp are on ; on "II" position only the gas detector is activated.

In a danger situation due to gas emission, the alarm consists in LED 7 blinking and in the intermittent acoustic signal from louvers 8-8'.

After a predetermined time, lamp 3 flashes as well, while the acoustic signal continues.

In practice, many constructive modifications of the present invention can be introduced, especially as for the details of the circuit, already known in itself and then not further described, and as for the detector and processor configuration.

Particularly, the detector utilized in the apparatus object of the present invention can be sensitive to the gas resulting from the combustion of either organic or inorganic substances (for instance, an oxygen detector set at the oxygen concentration value indicating a progressing combustion) ; or else, it can be a temperature sensor (for instance, an infrared ray absorption detector) ; again, it can be a threshold P.E.C., detecting the sudden bright light resulting from a fire.

A first embodiment of the apparatus of the present invention is provided with a detector of the abovementioned type, incorporated in an emergency lamp and connected to a processor which processes the signals sent from upsaid detector, where a first input detects fire absence and a second one detects fire presence ; upsaid processor sends a first output to the alarm system disabling it to function, when the processor receives upsaid first input, and a second output enabling it to function, when the processor receives upsaid second input.

In another embodiment of the invention, the apparatus is provided with a sensor of the abovementioned type, incorporated in an emergency lamp and connected to a processor for the processing of the signals coming from upsaid sensor ; the processor operates as already described hereabove ; it is connected only to one sensor ; this apparatus is provided with the same number of processors and sensors, being these processors connected to upsaid sensors.

In another embodiment, upsaid connection is obtained through electric wires.

In another embodiment, upsaid connection is made by means of electromagnetic waves, so that upsaid processors are provided with a sender and encoder, and the abovementioned alarm system is provided with a receiver and decoder. Finally, of course, the apparatus can be provided with two or more of the abovementioned detectors at the same time, all incorporated in the same emergency lamp.

### Claims

#### 1) SELF-CONTAINED APPARATUS FOR

EMERGENCY LIGHTING provided with rechargeable battery, characterized in that it comprises lighting means, detecting means for gas, smokes, heat and the like, which can send an electric input, processing means receiving upsaid electric input, and alarm systems activated by upsaid processing means, so that dangerous events can be detected and signalled in real time and without any need of electric supply.

2) APPARATUS as claimed in Claim 1, wherein upsaid alarm systems are optic and/or acustic.

3) APPARATUS as claimed in Claim 2, wherein upsaid apparatus is provided with a same number of processors and detectors, the processors being connected to the detectors.

4) APPARATUS according to any preceding Claims, in which upsaid connection is obtained through electric wires.

5) APPARATUS according to any preceding Claims, in which upsaid connection is obtained by means of electromagnetic waves, the processors being provided with electromagnetic sender and encoder, and the alarm systems with a receiver and decoder.

6) APPARATUS as claimed in Claim 7, wherein the optic alarm system, blinking and fixed, is obtained by using the main light source of the emergency lamp (fluorescent or incandescent lamp).

7) APPARATUS as claimed in Claim 1, wherein the incorporated processor activates a fixed acustic and optic alarm system, preventing the fixed optic alarm system (lamp) to be switched on or off, independently from switch control.

8) APPARATUS according to any preceding Claims, wherein emergency lamp, gas detector, optic and acustic alarm system are operated by incorporated rechargeable batteries, autonomously from the electric supply.

9) APPARATUS according to any preceding Claims, wherein upsaid detector can be outside connected to the lamp body, in a fixed or permanent way, by means of electric wires.

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